## **REMARKS**

Reconsideration is respectfully requested in view of any changes to the claims and the remarks herein. Please contact the undersigned to conduct a telephone interview in accordance with MPEP 713.01 to resolve any remaining requirements and/or issues prior to sending another Office Action. Relevant portions of MPEP 713.01 are included on the signature page of this amendment.

References to Applicants' specification will be by referring to the column and line number from issued parent patent US 5,706,067.

Support in the specification for claims 77, 57-63, 67-70 and 71 is as given the tables below.

CLAIM 57	
A liquid crystal display apparatus for	The field of the invention states "This
displaying an image, comprising:	invention relates to display devices" Col. 1, lines 8 - 11.
a substrate;	Original Claim 1 lines 5 - 7 recites: "a plurality of liquid crystal devices positioned on a semiconductor substrate" Fig. 1 shows
	"metal layer 24 and/or electrode mirror 30." (Col. 3, lines 30 - 31) of each of the plurality of liquid crystal devices.
a plurality of circuit	Original Claim 1 lines 5 - 7 recites: "a
elements being formed on	plurality of liquid crystal devices positioned on a semiconductor substrate." Fig. 1 shows
said substrate;	"metal layer 24 and/or electrode mirror 30"
	(Col. 3, lines 30 - 31) of each of the plurality of liquid crystal devices.
a first electrode connected	Original Claim 1, lines 5 - 7 recites "a
with said circuit element	plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid
and positioned over said	crystal devices, respectively, for placing a
circuit element;	voltage across its electrodes." "Liquid crystal device 12 comprises a liquid crystal material
	26, a top electrode 28 which may be for
	example In-Sn oxide (ITO), a bottom electrode 30 which functions as an electrode mirror: "Col. 3, lines 3 - 5.

a frame disposed along the edge of said first electrode,	Original claim 2 recites: "the spacial light modulator array of claim 1 wherein said reflector/absorber layer overlaps said edge of
with said frame comprising	said mirror." As shown in Fig. 1, the reflector/absorber layer 34 is at the edge of
an optical blocking material	electrode 24, 30 and blocks incident light 58
for blocking incident light	from leaking into switching elements below.  The reflector/absorber layer 34 at the edge is
from leaking into said	the frame.
switching element;	
a storage capacitor	Layers 24, 33, 46, 55, and 34 form a
electrically connected with	capacitor. Layer 20, 38 and 18 form a capacitor. Original claim 1 recites: "each of
said first electrode and	said mirrors and said reflector/absorber layer
positioned under said first	forms a capacitor." The first electrode 30 is electrically connected by stud 17 to metal
electrode;	layer 22 as shown in Fig. 1, Col. 2, lines 59 -
	Col. 3, lines 13. The abstract describes a "pixel storage capacitor to hold the voltage"
	across the liquid crystal device." "To form a
	storage capacitor 48 between metal layer 24
graphic and the second	and reflector absorber layer 34. Capacitor 48 is coupled With capacitor 50 formed by
	polysilicon layer 18, dielectric layer 38 and
The state of the s	polysilicon layer 20 which functions to hold the voltage on electrode 1 mirror 30." Col. 3,
6 8 1. 7 6 4 5	lines 31 - 38. The first electrode 30, is
	electrically connected by stud 17 to metal layer 22, see Fig. 1.
an optical reflector;	"Electrode/mirror 30" Col. 3, lines 4 - 13.
a first orientation film	U.S. Patent 4,999,619 cited at Col. 1, lines 34
formed on said optical	- 36 gives details on liquid crystal devices. Claim 2 of U.S. 4,999,619 states "in claim 3 a
reflector;	display device as claimed in claim 2,
	characterized in that the device comprises a
	polarizer and an analyzer, located in the desired paths of the incident and reflected
	beams, respectively, and in that the supporting
	plates have orientation layers giving the molecules of the liquid crystal a direction of
	orientation which is substantially parallel to
	the supporting plates or extends at a polarizer
	extends at an angle to the direction of

	orientation of the molecules in the area of the
	first supporting plate.
a second orientation film	
spaced apart from said first	*
orientation film;	
a second transparent	"A liquid crystal device 12 is shown
electrode;	positioned over substrate 14 which may be a single crystal semiconductor." Col. 2, lines 63 - 66. Substrate 14 is the first substrate.
an oriented layer of liquid	"A liquid crystal device 12 is shown
crystal material positioned	positioned over substrate 14 which may be a single crystal semiconductor." Col. 2, lines
between said first and	63 - 66. Substrate 14 is the first substrate.
second electrodes; and	*
said optical blocking means	"A reflector/absorber layer 34 functions to
comprises an anti-reflection	block or attenuate ambient light and impinging light on spatial light modulator 10
surface.	and passing through openings or gaps 56
	between mirrors such as bottom
	electrode/mirror 33 and bottom electrode mirror 30 shown by arrows 54, 58 and 59
	from passing into semiconductor substrate
	14." Col. 3, lines 8 - 13.

CLAIM 58	
A liquid crystal display apparatus for displaying an image, comprising:	The field of the invention states "This invention relates to display devices" Col. 1, lines 8 - 11.
a substrate;	Original Claim 1 lines 5 - 7 recites: "a plurality of liquid crystal devices positioned
	On a semiconductor substrate." In Fig. 1 is shown "metal layer 24 and/or electrode mirror 30." Col. 3, lines 30 - 31 of each of the
	plurality of liquid crystal devices. The semiconductor substrate is the first substrate.
a plurality of circuit	Original Claim 1 lines 5 - 7 recites: "a
elements being formed on	plurality of liquid crystal devices positioned on a semiconductor substrate." In Fig. 1 is
said substrate;	shown "metal layer 24 and/or electrode mirror 30." Col. 3, lines 30 - 31 of each of the

_	plurality of liquid crystal devices. The
	semiconductor substrate is the first substrate.
a first electrode connected	Original Claim 1, lines 5 - 7 recites: "a
with said circuit element	plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid
and positioned over said	crystal devices, respectively, for placing a
circuit element;	voltage across its electrodes." "Liquid crystal device 12 comprises a liquid crystal material
	26, a top electrode 28 which may be for example In-Sn oxide (ITO), a bottom electrode 30 which functions as an electrode mirror: "Col. 3, lines 3 - 5.
optical blocking means	"A reflector/absorber layer 34 functions to
formed under said first	block or attenuate ambient light and impinging light on spatial light modulator 10
electrode;	and passing through openings or gaps 56
	between mirrors such as bottom
	electrode/mirror 33 and bottom electrode
	mirror 30 shown by arrows 54, 58 and 59
·	from passing into semiconductor substrate
a storage capacitor	14." Col. 3, lines 8 - 13.  Layers 24, 33, 46, 55, and 34 form a
	capacitor. Layer 20, 38 and 18 form a
electrically connected with	capacitor. Original claim 1 recites: "each of
said first electrode and	said mirrors and said reflector/absorber layer
positioned under said first	forms a capacitor." The first electrode 30 is
•	electrically connected by stud 17 to metal
electrode;	layer 22 as show in Fig. 1, Col. 2, lines 59 -
	Col. 3, lines 13. The abstract describes a
	"pixel storage capacitor to hold the voltage across the liquid crystal device." "To form a
	storage capacitor 48 between metal layer 24
	and reflector absorber layer 34. Capacitor 48
	is coupled With capacitor 50 formed by
· ·	polysilicon layer 18, dielectric layer 38 and
	polysilicon layer 20 which functions to hold
	the voltage on electrode 1 mirror 30." Col. 3,
	lines 31 - 38. The first electrode 30, is
	electrically connected by stud 17 to metal
an ontical reflector	layer 22, see Fig. 1.
an optical reflector;	"Electrode/mirror 30" Col. 3, lines 4 - 13.
a first orientation film	U.S. Patent 4,999,619 cited at Col. 1, lines 34
formed on said optical	- 36 gives details on liquid crystal devices.
reflector;	Claim 2 of U.S. 4, 999,619 states "in claim 3
	a display device as claimed in claim 2,

a second orientation film spaced apart from said first orientation film;	characterized in that the device comprises a polarizer and an analyzer, located in the desired paths of the incident and reflected beams, respectively, and in that the supporting plates have orientation layers giving the molecules of the liquid crystal a direction of orientation which is substantially parallel to the supporting plates or extends at a polarizer extends at an angle to the direction of orientation of the molecules in the area of the first supporting plate.  U.S. Patent 4,999,619 cited at Col. 1, lines 34 - 36 gives details on liquid crystal devices.  Claim 2 of U.S. 4, 999,619 states "in claim 3 a display device as claimed in claim 2, characterized in that the device comprises a polarizer and an analyzer, located in the desired paths of the incident and reflected beams, respectively, and in that the supporting plates have orientation layers giving the molecules of the liquid crystal a direction of orientation which is substantially parallel to the supporting plates or extends at a polarizer
	extends at an angle to the direction of orientation of the molecules in the area of the first supporting plate.
a second transparent	"A liquid crystal device 12 is shown
electrode;	positioned over substrate 14 which may be a single crystal semiconductor." Col. 2, lines 63 - 66. Substrate 14 is the first substrate.
an oriented layer of liquid	"A liquid crystal device 12 is shown
crystal material positioned	positioned over substrate 14 which may be a single crystal semiconductor." Col. 2, lines
between said first and	63 - 66. Substrate 14 is the first substrate.
second electrodes; and	
said optical blocking means	"A reflector/absorber layer 34 functions to
comprises an anti-reflection	block or attenuate ambient light and impinging light on spatial light modulator 10
surface.	and passing through openings or gaps 56 between mirrors such as bottom electrode/mirror 33 and bottom electrode mirror 30 shown by arrows 54, 58 and 59 from passing into semiconductor substrate 14." Col. 3, lines 8 - 13.

CLAIM 59	
A liquid crystal display apparatus for	The field of the invention states "This
displaying an image, comprising:	invention relates to display devices." Col. 1,
	lines 8 - 11.
a substrate;	Original Claim 1 lines 5 - 7 recites: "a
	plurality of liquid crystal devices positioned on a semiconductor substrate." In Fig. 1 is
	shown "metal layer 24 and/or electrode mirror
	30." Col. 3, lines 30 - 31 of each of the
S. J. C.	plurality of liquid crystal devices. The
	semiconductor substrate is the first substrate.
a plurality of switching	Original Claim 1 lines 5 - 7 recites: "a
elements being formed on	plurality of liquid crystal devices positioned
said substrate;	on a semiconductor substrate." In Fig. 1 is
Salu Substiate,	shown "metal layer 24 and/or electrode mirror 30." Col. 3, lines 30 - 31 of each of the
· .	plurality of liquid crystal devices. The
	semiconductor substrate is the first substrate.
a first electrode connected	Original Claim 1, lines 5 - 7 recites "a
with said switching element	plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid
and positioned over said	crystal devices, respectively, for placing a
	voltage across its electrodes." "Liquid crystal
switching element;	device 12 comprises a liquid crystal material
·	26, a top electrode 28 which may be for
	example In-Sn oxide (ITO), a bottom
	electrode 30 which functions as an electrode
a storage capacitor	mirror: "Col. 3, lines 3 - 5.  Layers 24, 33, 46, 55, and 34 form a
	capacitor. Layer 20, 38 and 18 form a
electrically connected with	capacitor. Original claim 1 recites: "each of
said first electrode and	said mirrors and said reflector/absorber layer
positioned under said first	forms a capacitor." The first electrode 30 is electrically connected by stud 17 to metal
electrode;	layer 22 as shown in Fig. 1, Col. 2, lines 59 -
	Col. 3, lines 13. The abstract describes a
	"pixel storage capacitor to hold the voltage
	across the liquid crystal device." "To form a
	storage capacitor 48 between metal layer 24 and reflector absorber layer 34. Capacitor 48
	is coupled With capacitor 50 formed by
	polysilicon layer 18, dielectric layer 38 and
,	polysilicon layer 20 which functions to hold
•	1

an optical reflector;	the voltage on electrode 1 mirror 30." Col. 3, lines 31 - 38. The first electrode 30, is electrically connected by stud 17 to metal layer 22, see Fig. 1.  "Electrode/mirror 30." Col. 3, lines 4 - 13.
a second transparent	"A liquid crystal device 12 is shown
electrode on which said	positioned over substrate 14 which may be a
second orientation film is	single crystal semiconductor." Col. 2, lines 63 - 66. Substrate 14 is the first substrate.
formed;	
an oriented layer of liquid	U.S. Patent 4,999,619 cited at Col. 1, lines 34
crystal material positioned	- 36 gives details on liquid crystal devices. Claim 2 of U.S. 4, 999,619 states "in claim 3
between said first and	a display device as claimed in claim 2,
second electrodes;	characterized in that the device comprises a polarizer and an analyzer, located in the desired paths of the incident and reflected beams, respectively, and in that the supporting plates have orientation layers giving the
	molecules of the liquid crystal a direction of orientation which is substantially parallel to the supporting plates or extends at a polarizer extends at an angle to the direction of orientation of the molecules in the area of the first supporting plate.
substantially nonconductive	Original Claim 1, lines 8 - 10 "a reflector/absorber layer positioned and
optical blocking means	patterned with respect to said mirrors for
positioned between said	shielding said plurality of electrical circuits from ambient light." "With the structure
first electrode and said	shown in Fig. 1, shielding the semiconductor
switching element for blocking an incident light	devices in substrate 14 forming electrical circuits 16 from light is accomplished by the
	combination of electrode/mirror 30, and
from leaking into said switching element; and	reflector/absorber layer 34. Both the electrode/mirror 30 and reflector/absorber layer 34 are sufficiently thick so that they are optically opaque. Light or radiant energy 54 and 58 incident in opening 56 between electrode/mirrors 30 and 33 (partially shown on the left side of 30 in Fig. 1) of liquid crystal device would enter dielectric layer 46
. V	and would require multiple reflections as shown by arrow 59 between top surface 55 of

	reflector/absorber layer 34 and the bottom surface of electrode/mirror 30 to reach dielectric layers 44, 42, 40, and 36 and semiconductor substrate 14 containing electrical circuits 16 (not shown.) Col. 3, lines 51 - 65.
said optical blocking means	"A reflector/absorber layer 34 functions to
comprises an anti-reflection surface.	block or attenuate ambient light and impinging light on spatial light modulator 10 and passing through openings or gaps 56 between mirrors such as bottom electrode/mirror 33 and bottom electrode mirror 30 shown by arrows 54, 58 and 59 from passing into semiconductor substrate 14." Col. 3, lines 8 - 13.

CLAIM 60	
A liquid crystal display apparatus for	The field of the invention states "This
displaying an image, comprising:	invention relates to display devices" Col. 1, lines 8 - 11.
a substrate;	Original Claim 1 lines 5 - 7 recites: "a plurality of liquid crystal devices positioned on a semiconductor substrate." In Fig. 1 is shown "metal layer 24 and/or electrode mirror 30." Col. 3, lines 30 - 31 of each of the plurality of liquid crystal devices. The semiconductor substrate is the first substrate.
a plurality of switching	Original Claim 1 lines 5 - 7 recites: "a
elements being formed on	plurality of liquid crystal devices positioned on a semiconductor substrate." In Fig. 1 is
said substrate;	shown "metal layer 24 and/or electrode mirror 30." Col. 3, lines 30 - 31 of each of the plurality of liquid crystal devices. The semiconductor substrate is the first substrate.
a first electrode connected	Original Claim 1, lines 5 - 7 recites "a
with said switching element and positioned over said switching element;	plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid crystal devices, respectively, for placing a voltage across its electrodes." "Liquid crystal device 12 comprises a liquid crystal material 26, a top electrode 28 which may be for example In-Sn oxide (ITO), a bottom electrode 30 which functions as an electrode mirror: "Col. 3, lines 3 - 5.

	· · · · · · · · · · · · · · · · · · ·
a frame disposed along an edge of said first electrode, with said frame comprising an optical blocking insulating material for	Original claim 2 recites: "the spacial light modulator array of claim 1 wherein said reflector/absorber layer overlaps said edge of said mirror." As shown in Fig. 1, the reflector/absorber layer 34 is at the edge of electrode 24, 30 and blocks incident light 58 from leaking into switching elements below. The reflector/absorber layer 34 at the edge is
blocking incident light from leaking into said switching element;	the frame.
a storage capacitor electrically connected with said first electrode and positioned under said first electrode;  an optical reflector;	Layers 24, 33, 46, 55, and 34 form a capacitor. Layer 20, 38 and 18 form a capacitor. Original claim 1 recites: "each of said mirrors and said reflector/absorber layer forms a capacitor." The first electrode 30 is electrically connected by stud 17 to metal layer 22 as shown in Fig. 1, Col. 2, lines 59 - Col. 3, lines 13. The abstract describes a "pixel storage capacitor to hold the voltage across the liquid crystal device." "To form a storage capacitor 48 between metal layer 24 and reflector absorber layer 34. Capacitor 48 is coupled With capacitor 50 formed by polysilicon layer 18, dielectric layer 38 and polysilicon layer 20 which functions to hold the voltage on electrode 1 mirror 30." Col. 3, lines 31 - 38. The first electrode 30, is electrically connected by stud 17 to metal layer 22, see Fig. 1.  "Electrode/mirror 30" Col. 3, lines 4 - 13.
an optical reflector; a second transparent	"Electrode/mirror 30" Col. 3, lines 4 - 13.  "A liquid crystal device 12 is shown
electrode on which said	positioned over substrate 14 which may be a single crystal semiconductor." Col. 2, lines
second orientation film	63 - 66. Substrate 14 is the first substrate.
formed;	(A.1:
an oriented layer of liquid crystal material positioned between said first and second electrodes; and	"A liquid crystal device 12 is shown positioned over substrate 14 which may be a single crystal semiconductor." Col. 2, lines 63 - 66. Substrate 14 is the first substrate.
said optical blocking	"A reflector/absorber layer 34 functions to

material comprises an	block or attenuate ambient light and
antireflection anti-reflection	impinging light on spatial light modulator 10 and passing through openings or gaps 56
surface coating.	between mirrors such as bottom
rest to the second seco	electrode/mirror 33 and bottom electrode
	mirror 30 shown by arrows 54, 58 and 59
	from passing into semiconductor substrate
•	14 "Col 2 lines 9 12

CLAIM 61	
A liquid crystal display apparatus for	The field of the invention states "This
displaying an image, comprising:	invention relates to display devices" Col. 1, lines 8 - 11.
a substrate;	Original Claim 1 lines 5 - 7 recites: "a
	plurality of liquid crystal devices positioned on a semiconductor substrate." In Fig. 1 is
•	shown "metal layer 24 and/or electrode mirror
te star it in a	30." Col. 3, lines 30 - 31 of each of the plurality of liquid crystal devices. The
	semiconductor substrate is the first substrate.
a plurality of switching	Original Claim 1 lines 5 - 7 recites: "a
elements being formed on	plurality of liquid crystal devices positioned on a semiconductor substrate." In Fig. 1 is
said substrate;	shown "metal layer 24 and/or electrode mirror
	30." Col. 3, lines 30 - 31 of each of the plurality of liquid crystal devices. The
·	semiconductor substrate is the first substrate.
a first electrode connected	Original Claim 1, lines 5 - 7 recites "a
with said switching element	plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid
and positioned over said	crystal devices, respectively, for placing a
switching element;	voltage across its electrodes." "Liquid crystal device 12 comprises a liquid crystal material
	26, a top electrode 28 which may be for
	example In-Sn oxide (ITO), a bottom
	electrode 30 which functions as an electrode mirror: "Col. 3, lines 3 - 5.
nonconductive optical	Original Claim 1, lines 8 - 10 "a
blocking material formed	reflector/absorber layer positioned and patterned with respect to said mirrors for
under said first electrode;	shielding said plurality of electrical circuits
	from ambient light." "With the structure
	shown in Fig. 1, shielding the semiconductor devices in substrate 14 forming electrical
	1 ar : - real monday of a real fact of the second of the s

	circuits 16 from light is accomplished by the combination of electrode/mirror 30, and reflector/absorber layer 34. Both the electrode/mirror 30 and reflector/absorber layer 34 are sufficiently thick so that they are optically opaque. Light or radiant energy 54 and 58 incident in opening 56 between electrode/mirrors 30 and 33 (partially shown on the left side of 30 in Fig. 1) of liquid crystal device would enter dielectric layer 46 and would require multiple reflections as shown by arrow 59 between top surface 55 of reflector/absorber layer 34 and the bottom
	surface of electrode/mirror 30 to reach dielectric layers 44, 42, 40, and 36 and semiconductor substrate 14 containing electrical circuits 16 (not shown.) Col. 3, lines 51 - 65.
a storage capacitor	Layers 24, 33, 46, 55, and 34 form a
electrically connected with	capacitor. Layer 20, 38 and 18 form a
said first electrode and	capacitor. Original claim 1 recites: "each of said mirrors and said reflector/absorber layer
positioned under said first	forms a capacitor." The first electrode 30 is
electrode;	electrically connected by stud 17 to metal layer 22 as shown in Fig. 1, Col. 2, lines 59 - Col. 3, lines 13. The abstract describes a "pixel storage capacitor to hold the voltage across the liquid crystal device." "To form a storage capacitor 48 between metal layer 24 and reflector absorber layer 34. Capacitor 48
	is coupled With capacitor 50 formed by polysilicon layer 18, dielectric layer 38 and
	polysilicon layer 20 which functions to hold the voltage on electrode 1 mirror 30." Col. 3, lines 31 - 38. The first electrode 30, is electrically connected by stud 17 to metal layer 22, see Fig. 1.
an optical reflector formed	"Electrode/mirror 30" Col. 3, lines 4 - 13.
on said first electrode;	
a second transparent	"A liquid crystal device 12 is shown
electrode on which said	positioned over substrate 14 which may be a single crystal semiconductor." Col. 2, lines
second orientation film is	63 - 66. Substrate 14 is the first substrate.
formed;	

an oriented layer of liquid crystal material positioned between said first and second electrodes.

"A liquid crystal device 12 is shown positioned over substrate 14 which may be a single crystal semiconductor." Col. 2, lines 63 - 66. Substrate 14 is the first substrate.

CLAIM 62	
A spatial light modulator array for	The field of the invention states "This
modulating light to form an image	invention relates to display devices" Col. 1, lines 8 - 11.
comprising:	
a plurality of liquid crystal	Original Claim 1 lines 5 - 7 recites: "a
devices positioned over	plurality of liquid crystal devices positioned on a semiconductor substrate." In Fig. 1 is
respective mirrors on a	shown "metal layer 24 and/or electrode mirror
dielectric layer on a	30." Col. 3, lines 30 - 31 of each of the plurality of liquid crystal devices. The
semiconductor substrate;	semiconductor substrate is the first substrate.
a plurality of electrical	Original Claim 1 lines 5 - 7 recites: "a
circuits formed in said	plurality of liquid crystal devices positioned on a semiconductor substrate." In Fig. 1 is
semiconductor substrate	shown "metal layer 24 and/or electrode mirror
coupled to said liquid crystal	30." Col. 3, lines 30 - 31 of each of the plurality of liquid crystal devices. The
devices, respectively, for	semiconductor substrate is the first substrate.
placing a voltage across	4 are the state of the
electrodes of said liquid	
crystal devices;	
an absorber layer	"A reflector/absorber layer 34 functions to
positioned and patterned	block or attenuate ambient light and impinging light on spatial light modulator 10
with respect to said mirrors	and passing through openings or gaps 56
for shielding said plurality of	between mirrors such as bottom electrode/mirror 33 and bottom electrode
electrical circuits from	mirror 30 shown by arrows 54, 58 and 59
ambient light;	from passing into semiconductor substrate 14." Col. 3, lines 8 - 13.
said absorber layer having	Original Claim 1, lines 8 - 10 "a
an edge overlapping an	reflector/absorber layer positioned and patterned with respect to said mirrors for

shielding said plurality of electrical circuits edge of said mirror to form from ambient light." "With the structure an overlapping region to shown in Fig. 1, shielding the semiconductor decrease ambient light from devices in substrate 14 forming electrical circuits 16 from light is accomplished by the passing into said combination of electrode/mirror 30, and semiconductor substrate; reflector/absorber layer 34. Both the electrode/mirror 30 and reflector/absorber and layer 34 are sufficiently thick so that they are optically opaque. Light or radiant energy 54 and 58 incident in opening 56 between electrode/mirrors 30 and 33 (partially shown on the left side of 30 in Fig. 1) of liquid crystal device would enter dielectric layer 46 and would require multiple reflections as shown by arrow 59 between top surface 55 of reflector/absorber layer 34 and the bottom surface of electrode/mirror 30 to reach dielectric layers 44, 42, 40, and 36 and semiconductor substrate 14 containing electrical circuits 16 (not shown.) Col. 3, lines 51 - 65. said absorber layer "A reflector/absorber layer 34 functions to block or attenuate ambient light and comprises an anti-reflection impinging light on spatial light modulator 10 coating. and passing through openings or gaps 56 between mirrors such as bottom electrode/mirror 33 and bottom electrode mirror 30 shown by arrows 54, 58 and 59 from passing into semiconductor substrate 14." Col. 3, lines 8 - 13.

CLAIM 63	
A spatial light modulator array for modulating light to form an image comprising:	The field of the invention states "This invention relates to display devices" Col. 1, lines 8 - 11.
a plurality of liquid crystal devices positioned over respective mirrors on a	Original Claim 1 lines 5 - 7 recites: "a plurality of liquid crystal devices positioned on a semiconductor substrate." In Fig. 1 is shown "metal layer 24 and/or electrode mirror 30." Col. 3, lines 30 - 31 of each of the

dielectric layer on a	plurality of liquid crystal devices. The
semiconductor substrate;	semiconductor substrate is the first substrate.
a plurality of electrical	Original Claim 1 lines 5 - 7 recites: "a
circuits formed in said	plurality of liquid crystal devices positioned on a semiconductor substrate." In Fig. 1 is
semiconductor substrate	shown "metal layer 24 and/or electrode mirror
coupled to said liquid crystal	30." Col. 3, lines 30 - 31 of each of the
devices, respectively, for	plurality of liquid crystal devices. The semiconductor substrate is the first substrate.
placing a voltage across	
electrodes of said liquid	
crystal devices;	
a reflector layer positioned	"A reflector/absorber layer 34 functions to
and patterned with respect	block or attenuate ambient light and
to said mirrors for shielding	impinging light on spatial light modulator 10 and passing through openings or gaps 56
said plurality of electrical	between mirrors such as bottom
circuits from ambient light;	electrode/mirror 33 and bottom electrode mirror 30 shown by arrows 54, 58 and 59
	from passing into semiconductor substrate
acid reflector lever begins	14." Col. 3, lines 8 - 13.
said reflector layer having	Original Claim 1, lines 8 - 10 "a reflector/absorber layer positioned and
an edge overlapping an	patterned with respect to said mirrors for
edge of said mirror to form	shielding said plurality of electrical circuits from ambient light." "With the structure
an overlapping region to	shown in Fig. 1, shielding the semiconductor
decrease ambient light from	devices in substrate 14 forming electrical
passing into said	circuits 16 from light is accomplished by the combination of electrode/mirror 30, and
semiconductor substrate;	reflector/absorber layer 34. Both the
and	electrode/mirror 30 and reflector/absorber layer 34 are sufficiently thick so that they are
	optically opaque. Light or radiant energy 54
·.	and 58 incident in opening 56 between
	electrode/mirrors 30 and 33 (partially shown on the left side of 30 in Fig. 1) of liquid
. •	crystal device would enter dielectric layer 46
·	and would require multiple reflections as shown by arrow 59 between top surface 55 of
	reflector/absorber layer 34 and the bottom
the wy to a symmetric	surface of electrode/mirror 30 to reach dielectric layers 44, 42, 40, and 36 and

	semiconductor substrate 14 containing electrical circuits 16 (not shown.) Col. 3, lines 51 - 65.
said reflector layer	"A reflector/absorber layer 34 functions to
comprises an anti-reflection	block or attenuate ambient light and impinging light on spatial light modulator 10
coating.	and passing through openings or gaps 56
·	between mirrors such as bottom
·	electrode/mirror 33 and bottom electrode
	mirror 30 shown by arrows 54, 58 and 59
	from passing into semiconductor substrate
	14." Col. 3, lines 8 - 13.

CLAIM 67	
A liquid crystal display comprising:	The field of the invention states "This invention relates to display devices" Col. 1, lines 8 - 11.
a plurality of liquid crystal devices positioned over respective mirrors on a dielectric layer on a semiconductor substrate;	Original Claim 1 lines 5 - 7 recites: "a plurality of liquid crystal devices positioned on a semiconductor substrate." In Fig. 1 is shown "metal layer 24 and/or electrode mirror 30." Col. 3, lines 30 - 31 of each of the plurality of liquid crystal devices. The semiconductor substrate is the first substrate.
a plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;	Original Claim 1 lines 5 - 7 recites: "a plurality of liquid crystal devices positioned on a semiconductor substrate." In Fig. 1 is shown "metal layer 24 and/or electrode mirror 30." Col. 3, lines 30 - 31 of each of the plurality of liquid crystal devices. The semiconductor substrate is the first substrate.
a light blocking region positioned with respect to said mirrors for shielding said plurality of electrical circuits from ambient light;	"A liquid crystal device 12 is shown positioned over substrate 14 which may be a single crystal semiconductor." Col. 2, lines 63 - 66. Substrate 14 is the first substrate.

said light blocking region	"A reflector/absorber layer 34 functions to
being disposed between	block or attenuate ambient light and
said mirrors to decrease ambient light from passing	impinging light on spatial light modulator 10 and passing through openings or gaps 56 between mirrors such as bottom
into said semiconductor	electrode/mirror 33 and bottom electrode mirror 30 shown by arrows 54, 58 and 59
substrate; and	from passing into semiconductor substrate 14." Col. 3, lines 8 - 13.
said light blocking region	"A reflector/absorber layer 34 functions to
comprising an anti-reflection	block or attenuate ambient light and impinging light on spatial light modulator 10
coating.	and passing through openings or gaps 56
	between mirrors such as bottom
	electrode/mirror 33 and bottom electrode
	mirror 30 shown by arrows 54, 58 and 59
	from passing into semiconductor substrate
	14." Col. 3, lines 8 - 13.

CLAIM 68	
A liquid crystal apparatus comprising:	The field of the invention states "This invention relates to display devices" Col. 1, lines 8 - 11.
a plurality of liquid crystal devices positioned over respective mirrors on a dielectric layer on a semiconductor substrate;	Original Claim 1 lines 5 - 7 recites: "a plurality of liquid crystal devices positioned on a semiconductor substrate." In Fig. 1 is shown "metal layer 24 and/or electrode mirror 30." Col. 3, lines 30 - 31 of each of the plurality of liquid crystal devices. The semiconductor substrate is the first substrate.
a plurality of electrical circuits formed in said semiconductor substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;	Original Claim 1 lines 5 - 7 recites: "a plurality of liquid crystal devices positioned on a semiconductor substrate." In Fig. 1 is shown "metal layer 24 and/or electrode mirror 30." Col. 3, lines 30 - 31 of each of the plurality of liquid crystal devices. The semiconductor substrate is the first substrate.
a light blocking region	"A reflector/absorber layer 34 functions to block or attenuate ambient light and
Serial No. 08/999,663 Page 85	of 90 Docket No.: YO994-065XX

positioned with respect to said mirrors for shielding said plurality of electrical circuits from ambient light; and	impinging light on spatial light modulator 10 and passing through openings or gaps 56 between mirrors such as bottom electrode/mirror 33 and bottom electrode mirror 30 shown by arrows 54, 58 and 59 from passing into semiconductor substrate 14." Col. 3, lines 8 - 13.
said light blocking region comprising an anti-reflection coating.	"A reflector/absorber layer 34 functions to block or attenuate ambient light and impinging light on spatial light modulator 10 and passing through openings or gaps 56 between mirrors such as bottom electrode/mirror 33 and bottom electrode mirror 30 shown by arrows 54, 58 and 59 from passing into semiconductor substrate 14." Col. 3, lines 8 - 13.

CLAIM 69	
A liquid crystal apparatus comprising:  a plurality of liquid crystal devices positioned over respective mirrors on substrate;	The field of the invention states "This invention relates to display devices" Col. 1, lines 8 - 11.  Original Claim 1 lines 5 - 7 recites: "a plurality of liquid crystal devices positioned on a semiconductor substrate." In Fig. 1 is shown "metal layer 24 and/or electrode mirror 30." Col. 3, lines 30 - 31 of each of the plurality of liquid crystal devices. The
a plurality of electrical circuits formed in said substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;	semiconductor substrate is the first substrate.  Original Claim 1 lines 5 - 7 recites: "a plurality of liquid crystal devices positioned on a semiconductor substrate." In Fig. 1 is shown "metal layer 24 and/or electrode mirror 30." Col. 3, lines 30 - 31 of each of the plurality of liquid crystal devices. The semiconductor substrate is the first substrate.
a light blocking region positioned with respect to said mirrors for shielding said plurality of electrical	"A reflector/absorber layer 34 functions to block or attenuate ambient light and impinging light on spatial light modulator 10 and passing through openings or gaps 56 between mirrors such as bottom

Serial No. 08/999,663

Page 86 of 90

circuits from ambient light; and	electrode/mirror 33 and bottom electrode mirror 30 shown by arrows 54, 58 and 59 from passing into semiconductor substrate 14." Col. 3, lines 8 - 13.
said light blocking region	"A reflector/absorber layer 34 functions to
comprising an anti-reflection	block or attenuate ambient light and impinging light on spatial light modulator 10
coating.	and passing through openings or gaps 56 between mirrors such as bottom
	electrode/mirror 33 and bottom electrode
	mirror 30 shown by arrows 54, 58 and 59
	from passing into semiconductor substrate
	14." Col. 3, lines 8 - 13.
and the second of the second o	

CLAIM 70	
A liquid crystal apparatus comprising:	The field of the invention states "This invention relates to display devices" Col. 1, lines 8 - 11.
a plurality of liquid crystal devices positioned on substrate,	Original Claim 1 lines 5 - 7 recites: "a plurality of liquid crystal devices positioned on a semiconductor substrate." In Fig. 1 is shown "metal layer 24 and/or electrode mirror 30." Col. 3, lines 30 - 31 of each of the plurality of liquid crystal devices. The semiconductor substrate is the first substrate.
a plurality of electrical circuits formed in said substrate coupled to said liquid crystal devices, respectively, for placing a voltage across electrodes of said liquid crystal devices;	Original Claim 1 lines 5 - 7 recites: "a plurality of liquid crystal devices positioned on a semiconductor substrate." In Fig. 1 is shown "metal layer 24 and/or electrode mirror 30." Col. 3, lines 30 - 31 of each of the plurality of liquid crystal devices. The semiconductor substrate is the first substrate.
a light blocking region positioned between said liquid crystal devices for shielding said plurality of electrical circuits from ambient light; and	"A reflector/absorber layer 34 functions to block or attenuate ambient light and impinging light on spatial light modulator 10 and passing through openings or gaps 56 between mirrors such as bottom electrode/mirror 33 and bottom electrode mirror 30 shown by arrows 54, 58 and 59 from passing into semiconductor substrate 14." Col. 3, lines 8 - 13.

said light blocking region	"A reflector/absorber layer 34 functions to
comprising an anti-reflection	block or attenuate ambient light and impinging light on spatial light modulator 10
coating.	and passing through openings or gaps 56
	between mirrors such as bottom
	electrode/mirror 33 and bottom electrode
	mirror 30 shown by arrows 54, 58 and 59
A STATE OF THE STA	from passing into semiconductor substrate
	14." Col. 3. lines 8 - 13.

CLAIM 71	
A display unit according to claims 73, 75 or 76, wherein said first substrate has an insulation layer between said reflection electrode and said shading layer to form	Layers 24, 33, 46, 55, and 34 form a capacitor. Layer 20, 38 and 18 form a capacitor. Original claim 1 recites: "each of said mirrors and said reflector/absorber layer forms a capacitor." The first electrode 30 is
a holding capacitor.	layer 22 as shown in Fig. 1, Col. 2, lines 59 - Col. 3, lines 13. The abstract describes a "pixel storage capacitor to hold the voltage across the liquid crystal device." "To form a storage capacitor 48 between metal layer 24 and reflector absorber layer 34. Capacitor 48
	is coupled With capacitor 50 formed by polysilicon layer 18, dielectric layer 38 and polysilicon layer 20 which functions to hold the voltage on electrode 1 mirror 30." Col. 3, lines 31 - 38. The first electrode 30, is electrically connected by stud 17 to metal layer 22, see Fig. 1.

Claim 77	Support in specification
A display unit comprising	The field of the invention states
	"This invention relates to display devices"
	Col. 1, lines 8 - 11.
a first substrate comprising a plurality of	Original Claim 1 lines 5 - 7 recites:
reflection electrodes	"a plurality of liquid crystal devices
	positioned on a semiconductor substrate."
	In Fig. 1 is shown "metal layer 24 and/or
	electrode mirror 30." Col. 3, lines 30 - 31 of
	each of the plurality of liquid crystal devices.
	The semiconductor substrate is the first
	substrate.

with a gap portion formed therebetween,	"FIG. 11 shows a scanning electron micrograph of an array 11 of spatial light modulators 10" Col. 8, lines 46 - 47. "A reflector/absorber layer 34 functions to block or attenuate ambient light and impinging light on spacial light modulator 10 and passing through openings or gaps 56 between mirrors such as bottom electrode/mirror 33 and bottom electrode mirror 30." Col. 3, lines 8 - 13. "Light or radiant energy 54 and 58 incident in openings 56 between electrode/mirrors 30 and 33 (partially shown on the leftside of 30 in Fig. 1) of liquid crystal device 12." Col. 3 lines 56 - 59.
a second substrate annesing said first	
a second substrate opposing said first substrate having a transparent electrode,	"A liquid crystal device 12 is shown
Col. 3, lines 2 - 5. ITO is on the second	positioned over substrate 14 which may be a single crystal semiconductor." Col. 2, lines
substrate glass cover plate 29. "	63 - 66. Substrate 14 is the first substrate.
substrate grass cover prate 29.	05 - 00. Substrate 14 is the first substrate.
and a liquid crystal material being put between said first and said second substrates	"Liquid crystal device 12 comprises a liquid crystal material 26, a top electrode 28 which may be for example In-Sn oxide (ITO) a bottom electrode mirror 30 which functions as an electrode and a mirror." Col. 3, lines 2 - 5. ITO is on the second substrate glass cover plate 29. "Fig. 11 shows a scanning electrode micrograph of array 11 of spacial light modulators 10 without liquid crystal material 26, top electrode 28 or glass plate 29 shown on Fig. 10" Col. 8, lines 46 - 49.
wherein said first substrate has a shading layer	"A reflector/absorber layer 34 functions to
at least part of said gap portion and wherein	block or attenuate ambient light and
said shading layer exhibits a different	impinging light on spatial light modulator 10
reflection characteristic from said reflection	and passing through openings or gaps 56
electrodes, said shading layer comprises an	between mirrors such as bottom
anti-reflection surface	electrode/mirror 33 and bottom electrode
	mirror 30 shown by arrows 54, 58 and 59
	from passing into semiconductor substrate
	14." Col. 3, lines 8 - 13.

In view of the changes to the claims and the remarks herein, the Examiner is respectfully requested to reconsider the above-identified application. If the Examiner wishes to discuss the application further, or if additional information would be required, the undersigned will cooperate fully to assist in the prosecution of this application.

Please charge any fee necessary to enter this paper and any previous paper to deposit account 09-0468.

If the above-identified Examiner's Action is a final Action, and if the above-identified application will be abandoned without further action by applicants, applicants file a Notice of Appeal to the Board of Appeals and Interferences appealing the final rejection of the claims in the above-identified Examiner's Action. Please charge deposit account 09-0468 any fee necessary to enter such Notice of Appeal.

In the event that this amendment does not result in allowance of all such claims, the undersigned attorney respectfully requests a telephone interview at the Examiner's earliest convenience.

MPEP 713.01 states in part as follows:

Where the response to a first complete action includes a request for an interview or a telephone consultation to be initiated by the examiner, ... the examiner, as soon as he or she has considered the effect of the response, should grant such request if it appears that the interview or consultation would result in expediting the case to a final action.

IBM Corporation Intellectual Property Law Dept. P.O. Box 218

Yorktown Heights, NY 10598

Respectfully submitted,

Dr. Daniel P. Morris, Esq.

Reg. No. 32,053

Phone No. (914) 945-32/17